CLAIMS

1 A curable liquid resin composition comprising the following components (A), (B), and (C):

(A) 0.5-50 wt% of a urethane (meth)acrylate oligomer obtained from a polyol (a) having a branched structure comprising at least one branch point and at least three molecular chains extending from that branch point, said molecular chains having a molecular weight of 200 g/mol or more, including a hydroxyl group at the terminal of at least two molecular chains extending from the branch point, a polyisocyanate (b), and a hydroxyl group-containing (meth)acrylate (c);

(B) 5-90 wt% of a polymerizable organic compound; and

(C) 0.1-10 wt% of a polymerization initiator,

wherein the cured product has a Young's modulus of 350 MPa or more at 23°C.

2 The curable liquid resin composition according to claim 1, wherein each molecular chain extending from the branch point of (a) includes a hydroxyl group.

3 The curable liquid resin composition according to claim 1, wherein the molecular chains having a molecular weight of 500 g/mol or more.

4 A curable liquid resin composition comprising the following components (A), (B), and (C):

(A) 5-45 wt% of a urethane (meth)acrylate oligomer obtained from a polyol having a branched structure, including a hydroxyl group at the terminal of each branched molecular chain (hereinafter referred to as a side chain), and having a side chain number average molecular weight of 500-2,000, a polyisocyanate, and a hydroxyl group-containing (meth)acrylate, the oligomer containing the hydroxyl group originating from the polyol;

(B) 5-90 wt% of a polymerizable monofunctional compound; and

(C) 0.1-10 wt% of a polymerization initiator.

5 The curable liquid resin composition according to any one of claims 1-4, wherein the cured product has a Young's modulus of 500 MPa or more at 23°C.

6 The curable liquid resin composition according to any one of claims 1-5, wherein the stress-relaxation time of the cured product is less than 4 minutes.

7 The curable liquid resin composition according to any one of claims 1-6,

wherein the steady state compliance J_e is 2 MPa^{-1} or more.

8 The curable liquid resin composition according to any one of claims 1-7, wherein the polyol (a) of the component (A) has 3-6 molecular chains extending from the branch point, at least two of said molecular chains extending from the branch point including a hydroxyl group.

9 The curable liquid resin composition according to any one of claims 1-8 containing at least one further urethane (meth)acrylate which is different form (A).

10 The curable liquid resin composition according to claim 9, wherein the at least one further urethane (meth)acrylate is a urethane (meth)acrylate oligomer based on a diol.

11 The curable liquid resin composition according to any one of claims 1-10, wherein the curable liquid resin composition is a curable liquid secondary coating composition, a curable liquid ink material or a curable liquid matrix material.

12 Use of a curable liquid resin composition according to any one of claims 1-11 as a secondary coating composition, ink composition or matrix material for coating an optical glass fiber.

13 Cured product obtained by curing a curable liquid resin composition according to any one of claims 1-11.

14 Coated optical fiber comprising a glass optical fiber having a primary coating, a coated optical fiber comprising a glass optical fiber having a primary coating and a secondary coating, a coated optical fiber comprising a glass optical fiber having a primary coating, a secondary coating and an upjacketing coating, a coated optical fiber comprising a glass optical fiber and a single coating, a coated optical fiber comprising a glass optical fiber, a single coating and an upjacketing coating, and each coated fiber optionally having an ink composition applied thereon, and to an optical fiber ribbon comprising at least two of said coated and optionally inked optical fibers wherein at least one of said coating or composition is derived from a radiation-curable composition as described in any one of claims 1-9.

15 Process for the preparation of a branched polyol comprising at least one branch point and at least three molecular chains extending from that branch point, including a hydroxyl group at the terminal of at least two molecular chains extending from the branch point, the method comprising a reaction of a polyol (a') comprising at least three hydroxyl groups with a polyisocyanate (b)

and at least one other polyol (a"), wherein the polyol (a') forms the branch point of the branched polyol and the at least one other polyol (a") forms the molecular chains extending from the branch point, and wherein the polyisocyanate connects the branch point and the molecular chain extending from the branch point.

16 Process according to claim 15, wherein the molecular weight of at least three molecular chains extending from the branch point is 200 g/mol or more.

17 Process according to claim 15 or claim 16, wherein the other polyol is a diol.

18 Process according to any one of claims 15-17, wherein the branched polyol includes 3 or 4 molecular chains extending from the branch point.

19 Branched polyol obtainable by the process according to any one of claims 15-18.

20 Process for the preparation of a urethane (meth)acrylate oligomer wherein the branched polyol according to claim 19 is further reacted with a polyisocyanate (b) and a hydroxyl group containing (meth)acrylate (c) to form the urethane (meth)acrylate oligomer.

21 Urethane (meth)acrylate oligomer obtainable by the process according to claim 20.

22 Use of a urethane (meth)acrylate oligomer obtained from a polyol (a) having a branched structure comprising at least one branch point and at least three molecular chains extending from that branch point, said molecular chains having a molecular weight of 200 g/mol or more, including a hydroxyl group at the terminal of at least two molecular chains extending from the branch point, a polyisocyanate (b), and a hydroxyl group-containing (meth)acrylate (c) as a rheology modifier.